CLAIMS:

1. A method for selecting a mutant miniature plant having a desired trait, comprising the steps of:

(a) providing a population of miniature plants, wherein said miniature plants have the following characteristics: (i) reduced size in comparison to a commercial plant of the same species; (ii) maturation to produce viable seeds or tubers at a plant density of at least ten-fold higher than standard growth conditions used for a commercial plant of the same species; and (iii) capable of being crossed with a commercial plant of the same species;

(b) generating mutant miniature plants in said miniature plant population by treating said miniature plants with a mutation-inducing agent to produce a mutagenized miniature plant population; and

(c) selecting a mutant miniature plant having said desired trait within said mutagenized miniature plant population.

2. The method of claim 1, wherein said population of miniature plants is generated by natural or induced mutation, by genetic engineering, or by treatment with plant growth factors.

3. The method of claim 2, wherein said miniature plant is a miniature tomato cultivar.

4. The method of claim 1, wherein said commercial plant of the same species is used to produce food, fiber or flowers.

5. The method of claim 4, wherein said commercial plant of the same species is a plant which produces a berry-type fruit or a plant of the Solanaceae family.

6. The method of claim 5, wherein said commercial plant produces a berry-type fruit selected from tomato, grape, prune, eggplant citrus fruits, apple.

7. The method of claim 1, wherein said mutation-inducing agent in step (b) is a chemical mutagen selected from the group consisting of ethyl methanesulfonate (EMS), methyl methanesulfonate (MMS), methyl-N-nitrosourea (MNU), and bleomycins.

8. The method of claim 1, wherein said mutation-inducing agent in step (b) is irradiation selected from the group consisting of UV, γ-irradiation, X-rays, and fast neutrons.

9. The method of claim 1, wherein said mutation-inducing agent in step (b) is a mobile DNA sequence which is selected from the group consisting of a T-DNA and a transposable element.

10. The method of claim 9, wherein said transposable element is selected from the group consisting of an autonomous transposon, a non-autonomous transposon, and an autonomous/non-autonomous transposon system.

11. The method according to claim 10, where said transposable element is the maize Ac/Ds transposable element.

12. A mutant miniature plant selected by the method of ~~any one of claims 1 to 11~~ claim 1.

13. The mutant miniature plant of claim 12, wherein said miniature plant is a miniature tomato cultivar.

14. A mutant miniature plant population wherein a miniature plant of said population has the following characteristics: (i) reduced size in comparison to a commercial plant of the same species; (ii) matures to produce viable seeds or tubers at a density of at least ten-fold higher than standard growth conditions used for a commercial plant of the same species; (iii) capable of being crossed with a commercial plant of the same species; and (iv) carries a mutation induced by an agent selected from the group consisting of a chemical mutagen, irradiation, and a mobile DNA sequence.

15. The mutant miniature plant population of claim 14, wherein said commercial plant of the same species is used to produce food, fiber or flowers.

16. The mutant miniature plant population of claim 15, wherein said commercial plant of the same species is a plant which produces a berry-type fruit or a plant of the Solanaceae family.

17. The mutant miniature plant population of claim 16, wherein said commercial plant produces a berry-type fruit selected from tomato, grape, prune, eggplant citrus fruits, apple.

18. A method for identifying a miniature plant containing a mobile DNA sequence inserted into a gene of interest comprising the steps of:

(a) providing a population of miniature plants, wherein said miniature plants have the following characteristics: (i) reduced size in comparison to a commercial plant of the same species; (ii) maturation to produce viable seeds or tubers at a plant density of at least ten-fold higher than standard growth conditions used for a commercial plant of the same species; and (iii) capable of being crossed with a commercial plant of the same species;

(b) generating mutant plants in said miniature plant population by treating said plants with a mobile DNA sequence;

(c) screening DNA extracted from said mutant plants with PCR using a first primer corresponding to a nucleotide sequence of said mobile DNA sequence and a second primer corresponding to a nucleotide sequence of said gene of interest; and

(d) identifying a miniature plant comprised of DNA which produces a PCR product in the presence of said first and second primers.

19. The method of claim 18, wherein said miniature plant is a miniature tomato cultivar.

20. The method of claim 18, wherein said mobile DNA sequence is selected from the group consisting of a T-DNA or a transposable element.

21. The method according to claim 20, where said transposable element is the maize Ac/Ds transposable element.

22. A method for producing a mutant population of a miniature plant comprising the steps of:

(a) providing a population of miniature plants, wherein said miniature plants have the following characteristics: (i) reduced size in comparison to a commercial plant of the same species; (ii) maturation to produce viable seeds or tubers at a plant density of at least ten-fold higher than standard growth conditions used for a commercial plant of the same species; and (iii) capable of being crossed with a commercial plant of the same species; and

(b) generating mutant plants in said miniature plant population by treating said plants with a mutation-inducing agent to produce said mutant population of said miniature crop plant cultivar.

23. The method of claim 22, wherein said population of miniature plants is generated by natural or induced mutation, by genetic engineering, or by treatment with plant growth factors.

24. The method of claim 22, wherein said mutation-inducing agent in step (b) is a chemical mutagen selected from the group consisting of ethyl methanesulfonate (EMS), methyl methanesulfonate (MMS), methyl-N-nitrosourea (MNU), and bleomycins.

25. The method of claim 22, wherein said mutation-inducing agent in step (b) is irradiation selected from the group consisting of UV, γ-irradiation, X-rays, and fast neutrons.

26. The method of claim 22, wherein said mutation-inducing agent in step (b) is a mobile DNA sequence selected from the group consisting of a T-DNA or a transposable element.

27. The method of claim 26, wherein said mutation-inducing agent is a T-DNA and said miniature plants are infected with *Agrobacterium*, thus producing multiple transformants wherein each transformant contains a T-DNA insertion in a different genomic position.

28. The method of claim 26, wherein said mutation-inducing agent is a transposon and the mutant miniature plant population is obtained from the progeny of miniature plants containing an active transposition system.

29. The method of claim 28, wherein said active transposition system is a plant native transposon or a transposon introduced into the plant by genetic engineering techniques.

30. The method of claim 29, wherein said active transposition system is selected from an autonomous transposon, and a transposable element obtained by crossing a plant containing a non-autonomous transposon with either a transposase source or with a plant containing an autonomous transposon.

31. The method according to claim 29, wherein said transposable element comprises the maize Ac/Ds transposon system.

32. The method ~~of claim 22 to 31~~, wherein said miniature plant is a miniature tomato cultivar.

33. A method for identifying a nucleotide sequence which controls plant gene expression comprising the steps of:

(a) transforming a miniature plant with a DNA construct to produce a population of randomly mutagenized plants, wherein said DNA construct comprises a gene sequence encoding a screenable marker which lacks a promoter or contains a minimal promoter, said gene sequence being cloned within the borders of a mobile DNA sequence, wherein said miniature plant has the following characteristics: (i) reduced size in comparison to a commercial plant of the same species; (ii) maturation to produce viable seeds or tubers at a plant density of at least ten-fold higher than

standard growth conditions used for a commercial plant of the same species; and (iii) capable of being crossed with a commercial plant of the same species to produce a population of randomly mutagenized plants;

(b) identifying a miniature plant within said plant population which is transformed with said DNA construct and expresses said screenable marker; and

(c) cloning the nucleotide sequence which is operably linked to said gene encoding said screenable marker from the total DNA isolated from said miniature plant identified in step (b).

34. The method of claim 33, wherein said screenable marker is selected from GUS and luciferase.

35. The method of claim 33 ~~or 34~~, wherein said mobile DNA sequence is a T-DNA or a transposable element.

36. The method of claim 33, wherein said nucleotide sequence which controls plant gene expression is a promotor or enhancer.

37. A method for producing a mutant population of a commercial plant with a desired trait, which comprises the steps of:

(a) crossing a mutant miniature plant selected according to the method of claim 1 having said desired trait, with a commercial plant of the same species; and

(b) selecting progeny which resemble the commercial parent plant and express said desired trait.

38. The method of claim 37, wherein said commercial plant is used to produce food, fiber or flowers.

39. The method of claim 38, wherein said commercial plant is a plant which produces a berry-type fruit or a plant of the Solanaceae family.

40. The method of claim 39, wherein said commercial plant produces a berry-type fruit selected from tomato, grape, prune, eggplant citrus fruits, apple.

41. A commercial plant having a desired trait produced by the method of claim 37.

42. The commercial plant of claim 41, wherein said commercial plant is used to produce food, fiber or flowers.

43. The commercial plant of claim 42, wherein said commercial plant is a plant which produces a berry-type fruit or a plant of the Solanaceae family.

44. The method of claim 43, wherein said commercial plant produces a berry-type fruit selected from tomato, grape, prune, eggplant citrus fruits, apple.

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